

Framework for Municipal Zero Emission Vehicle Deployment: Project Summary

**Clean Air Partnership Municipal EV
Strategies Workshop**

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Project Partners

This project was made possible through generous support from:



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Bruce *Power*TM
A graphic element consisting of three blue, wavy lines representing water or a stylized sun/moon.

Innovation at work

Our Work on ZEV Deployment



- Accelerating the Deployment of Plug-in Electric Vehicles in Canada and Ontario
<https://www.pollutionprobe.org/publications/accelerating-ev-deployment-report/>
- City of Toronto Electric Mobility Strategy: Assessment Phase
<https://www.pollutionprobe.org/publications/toronto-electric-mobility-assessment-phase-report/>
- Accelerating the Deployment of Zero Emission Vehicles: Atlantic Canada and the Prairies
<http://www.pollutionprobe.org/publications/accelerating-deployment-zevs-atlantic-canada-prairies/>
- Decarbonizing Transportation in Canada: Building a Foundation for Success
<http://www.pollutionprobe.org/publications/decarbonizing-transportation-in-canada/>
- Interaction of Electric Vehicles and the Grid Within Canada
<http://www.pollutionprobe.org/publications/pollution-probe-ev-grid-gap-analysis-study/>
- Delivered Government of Ontario's Electric and Hydrogen Vehicle Advancement Partnership (EHVAP)
- Member of Government of Canada's national ZEV Advisory Committee

Project Rationale

- Transportation is the leading source of greenhouse gas and air pollutant emissions in most Canadian cities
- Transportation impacts on human and environmental health are felt most acutely in cities
- Municipal governments have set ambitious GHG reduction and other climate-related targets and transportation is a core area for action
- Municipalities have constrained budgets and their staff need expert knowledge to help chart a course to a low-carbon transport future

Project Objective

Develop a generic municipal zero emission vehicle (ZEV) deployment framework supported by a Matrix of Actions that, when implemented by local governments, will lead to the reduction of GHG and air pollutants.

- Matrix of Actions identify activities related to ZEV deployment and the stakeholders who could be involved their implementation
- Matrix of Actions was to include a wide range of options, to be customizable for municipalities of any size
- Actions were to be sourced from secondary research, expert interviews, stakeholder workshops, and proven best practices

Framework Report Walkthrough: Introduction

- Includes background info on:
 - Transportation and climate change
 - IEA Global Pilot EV City Programme
 - Range of currently available zero emission vehicles (ZEVs) and charging options
 - Environmental, social and economic benefits of ZEVs
 - Current ZEV adoption levels in Canada and globally



Framework Report Walkthrough: Section 2

- Identifies and describes roles of key stakeholder groups in ZEV deployment
- Groups include:
 - Municipal, provincial and federal government
 - Utilities
 - Automakers and dealerships
 - EVSE providers
 - Real estate developers and property managers
 - Civil society (academia, NGOs, associations, etc.)
 - Fleet owners and operators

Framework Report Walkthrough: Section 3

- Introduces readers to the two Matrix of Actions developed for the Framework

Municipal Zero Emission LDV Matrix of Actions

Fueling & Charging Infrastructure	Education & Awareness	Incentives	Complementary Mechanisms
Public charging network partnerships (including inter-municipal) M G U A D I R P CS	Public education programs and campaigns M G U A CS	Vehicle and/or charger voucher or rebate M G U D I	Advocate for changes to provincial/federal regulations: MURBs M G U P CS
Public charging stations and charging hubs including on-street parking M U I	Curriculum at local schools, colleges, and universities M G CS	E-bike/scooter voucher or rebate M G A	Advocate for changes to provincial/federal regulations: other regulatory barriers M G
Charging at municipally owned facilities M U I	Information at charging points M G I CS	Vehicle scrappage incentives M G D CS	Amend or introduce local bylaws to address barriers (e.g., anti-ICEing bylaw) M G
Seek external infrastructure funding opportunities M G U	Promotion at workplaces, Workplace Charging Challenge M P CS	Multi-unit residential building retrofit and load management incentives M G P	Explore adding ZEV infrastructure to Community Amenity Contributions M R
ZEV-ready new single-family homes M G U I R	Address knowledge gaps surrounding home charging M U A D I CS	Preferential or free parking M P	Research partnerships, innovation, and field testing M U A CS
ZEV-ready new commercial and institutional buildings M G U I R P	Provide information on city website (including charging/fueling infrastructure locations; total cost of ownership calculator) M	Toll discount M G	Collect data on usage of charging facilities, ZEV purchases, infrastructure availability M U D I

Fleet, MDV and HDV Matrix of Actions

Fueling & Charging Infrastructure	Education & Awareness	Incentives	Municipal & Private Fleets, Public Transportation	Complementary Mechanisms
Charging and fueling network partnerships M G U A D I F CS	Public education programs and awareness campaigns (including myth-busting) M G U A CS	New and retrofit ZEV grants, rebates, tax credits, and loans M G U D	Fleet conversion feasibility and cost assessment studies M U A D I F	ZEV fleet-owner groups and networks for information sharing M G U D F CS
Test and demonstrate charging technology M U A D I F	Information at public charging/refueling points (particularly for non-return-to-base fleets) M G I CS	Financing and leasing programs (perhaps utilizing carbon tax revenue or Clean Fuel Standard credits) M G U A	Technology demonstrations and pilot projects M U A D I F	Municipal ZEV contractor and car-share preference M F
Installation of charging stations and shared charging hubs M U I F	ZEV showcases, demonstrations, and events M U A D I CS	Incentives in fee structure (preferential rate structures) for private and public charging (servicing return-to-base fleets) M G U	Establish targets and develop plans for fleet conversion M U D I F CS	Integrate public transit with shared mobility M U I F CS
Align ZEV public transportation route planning and design with infrastructure requirements M U I F	Promotion of ZEVs to fleet owners and operators M G A D F CS	Charging/refueling station grants, rebates, tax credits, and loans M G U D	Municipal ZEV purchase/procurement and fleet conversion M D F	Establish internal working group or task force to coordinate conversion plans M U F CS
Explore external funding opportunities M G U I F	Curriculum at local schools, colleges, and universities (including training programs for operators and maintenance technicians) M G CS	Vehicle scrappage incentives M G F CS	Municipal ZEV-first procurement policy (perhaps through setting emission requirement thresholds) M D F	Assess impacts on vulnerable populations and communities M F CS

Framework Report Walkthrough: Section 4

- Overviews the fundamental steps required in the development of ZEV deployment strategies, which include:
 - Setting initial objectives and guiding principles
 - Developing a baseline (with regard to: existing ZEV adoption, situating ZEV deployment within other municipal activities and programs, electrical grid readiness, provincial and federal policy contexts, active stakeholder groups, etc.)
 - Developing and implementing a stakeholder engagement plan
 - Setting targets and refining objectives
 - Choosing and sequencing actions (examples of priority actions for near, medium and long term are provided)

Framework Report Walkthrough: Section 5

- Provides readers with best practice case studies from leading jurisdictions, correlated to the categories/columns in the two Matrix of Actions
- Jurisdictions selected were: North Vancouver, BC, Montréal, QC, and Portland, OR
- Additional case study examples are provided in the report's appendices

Framework Report Walkthrough: Appendices

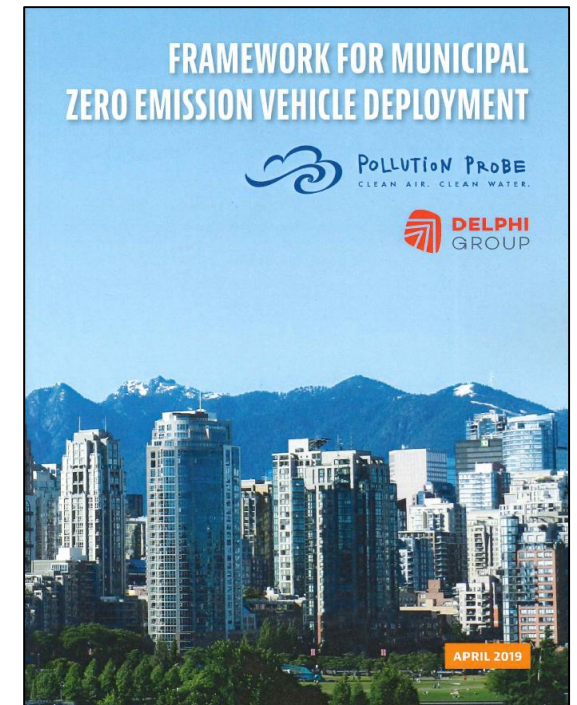
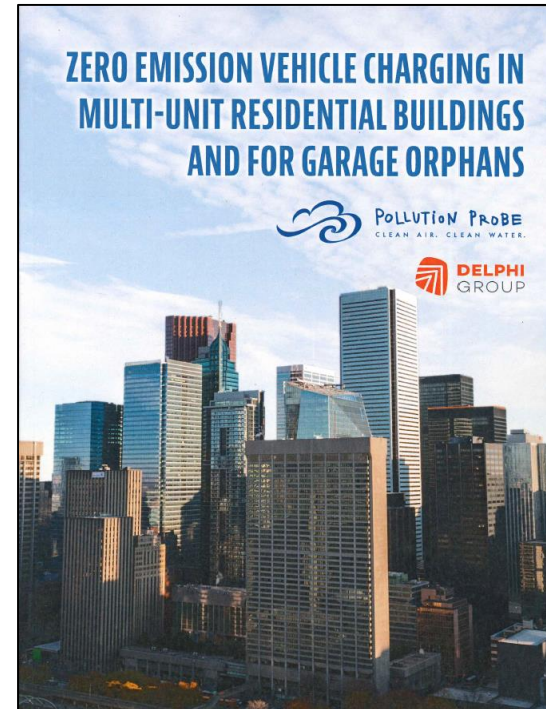
- Appendix A and B provide detailed definitions of each of the 150+ actions contained in the two matrices
- Best practice examples are also provided for individual actions, where available
- These sections are intended to be used by municipal practitioners and partners in the selection, planning and implementation of specific actions to support local ZEV deployment
- Key challenges and potential solutions associated with each area for action/Matrix column are also provided

Framework Report: Additional Notes

- Neither the key stakeholder groups nor the 150+ potential actions detailed in the report are intended to be exhaustive
- Specific actions and partners required for an effective ZEV deployment strategy will be unique to each municipality
- Local factors such as ZEV adoption levels and demand, GHG and air pollutant reduction targets, and available financial resources will play major roles in determining the specifics of a given municipal ZEV strategy
- This report provides all Canadian municipalities, many of which may lack dedicated resources or expertise related to ZEVs, with a strong foundation on which to build ZEV deployment strategies

Companion Report: ZEV Charging in MURBs

- Pollution Probe and The Delphi Group also recently completed a project aimed at facilitating the deployment of EVSE for garage orphans and MURB residents (who comprise over half of all citizens in many cities)
- The project report, ***Zero Emission Vehicle Charging in Multi-Unit Residential Buildings and for Garage Orphans***, is now available for download from Pollution Probe's website
- Feel free to reach out if you would like a copy or to be put on our distribution list



THANK-YOU!

For a copy of the Framework for Municipal ZEV Deployment report, please visit:

<https://www.pollutionprobe.org/municipal-zev-framework/>

For a copy of the ZEV Charging in MURBs and for Garage Orphans report, please visit:

<https://www.pollutionprobe.org/zev-charging-in-murbs/>

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